AMSAT News Service Weekly Bulletins
Issue: ANS-320
Date: 2020-11-15
Sources: amsat-ans-2020-ans-320-weekly-hyperkitty-1b53eec110.txt

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AMSAT NEWS SERVICE
ANS-320

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor(a)amsat.org

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

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SB SAT @ AMSAT $ANS-320.01
ANS-320 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 320.01
>From AMSAT HQ KENSINGTON, MD.
DATE 2020 November 15
To All RADIO AMATEURS
BID: $ANS-320.01

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technology that brought us the voice of Neil Armstrong when the Apollo 11 mission landed on the moon in 1969," Schediwy said. "Free-space optical laser communications has several advantages over radio, including significantly faster data rates and hack-proof data transfer. It's the next generation of space communications, and it's likely to be how we'll see high-definition footage of the first woman to walk on the moon."

The $535,000 ground station will use a 0.7-meter observatory-grade optical telescope donated to ICRAR, which will be fitted with atmospheric noise suppression technology developed at the university. The Western Australian ground station will be a joint venture between the UWA Astrophotonics Group, the ARC Centre of Excellence for Engineered Quantum Systems (EQUS), and UK industry partner Goonhilly Earth Station, which handles data traffic and supports secure communications links for major satellite operators including Intelsat, Eutelsat, and SES Satellites.

Data from the station will be fed to Goonhilly's supercomputer data center in Cornwall, England by high-speed fiber. It will form part of a larger Australasian network of optical stations, led by the Australian National University and supported by partners in South Australia and New Zealand.

EQUS Director Andrew White said the Western Australian ground station could be the first of its kind in the southern hemisphere and have additional applications in research in different fields.

Goonhilly Chief Executive Ian Jones said the initiative is driving satellite communications into the next generations of systems and technologies needed to support the "enormous" data volumes produced by space missions. "This data arises from science and other missions and, in the future, will come from lunar and Mars missions that involve remote operations, robotics, and AI," Jones said. The ground station is expected to be operational from early 2021 and open for business later that year.

[ANS thanks Rick Lindquist, WW1ME, Editor of The ARRL Letter for the above information]

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WB4APR Seeking high power VHF stations for Leonids Meteor Shower

Bob Bruninga, WB4APR is seeking a several AMSAT operators with beams and high power transmitters to join in a Meteor Shower experiment. Bob writes:

With the Leonids Meteor shower coming up after Midnight next Monday (Tues AM), maybe its time to have some fun with APRS again!

Last time we did this was 1998 and over 48 MS packets were seen over 500 to 600 miles on the APRS channel.. Here is the report: http://aprs.org/APRS-docs/LEONIDS.TXT

This year I propose not a free-for-all but just a few HIGH power stations transmitting and everyone else in the country checks the next morning to see what they copied. Best TX stations are those with several hundred watts and a beam. Even one such station would be a great test, because on 144.39 we would have maybe 10,000 full time normal APRS stations as receivers. In retirement, I don't have the power nor the beam.

Up to 15 TX stations with power capability > 100W and beams would participate. Beams would be pointed toward distant population centers. The

15 transmitting stations will be distributed in various parts of the country would TX a continuous keydown string of short packets for 15 seconds every minute. Special software and APRS ID's will be used. Xmission will be on the 144.39 national APRS channel to maximize the number of people that might copy one.

Transmissions begin at midnight local time and runs to 6 AM only to minimize any interference to other operators. This will result in local reception within about 20 miles of the TX station, but since the pac-kets have no path, they can only be heard in simplex range of a trans-mitter or via meteor scatter. If a meteor happens, someone within about 400 to 600 miles is likely capture it. Because the APRS channel load in most areas is only a packet every 3 or 4 seconds and that gives everyone a receive window of 75% of the total slots available. Even if the TX stations are not synchronized, it doesnt matter because a given meteor path only exists for a fraction of a second between two fixed 100 mile or so areas for that instant.

The 15 high power TX stations will send is about 30 copies of the APRS grid format in a single burst every minute. This burst would look like:
>GG##gg<CR>
>GG##gg<CR>
>GG##gg<CR>
>GG##gg<CR>
...
>GG##gg<CR>
>GG##gg<CR>

The TNC will concatenate probably seven to ten of these at a timel into dense packets with only a single TX delay, not 30 delays.

The TNC has UNPROTO set to simply "APRS" no path! And set to CONVErSE..

Adjust the number (30?) till the TX burst lasts 15 seconds each minute. The result is a complete grid in only 200 milliseconds each. Hopefully short enough so that occasionally one will get bounced somewhere by the extremely short meteor path bursts at VHF.

Point beam toward an area with a dense ham population that is at least 600 miles away. Vertical or Horizontal polarization will work.

The PARS IS will be from the range METEOR-1 through METEOR-15

RX stations will not need to do anything special. Any APRS software should capture and decode and plot a grid report if received overnight.

For those who are interested, here is the 1998 experiment page: http://aprs.org/meteors.html Look about 75% down the page for the map of the 1998 2m experiment.

[ANS thanks Bob Bruninga, WB4APR for the above information]

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AMSAT Italia and Italian Space Agency ISS STEAM agreement

AMSAT Italia and ASI, the Italian Space Agency, have subscribed a three-year framework program for joint initiatives in the area of the scientific culture development with particular interest in the aero-space field. The agreement also aims to develop interest of new genera-tions in the STEAM disciplines: Science, Technology, Engineering, Arts, and Mathematics. In this framework AMSAT Italia will propose the Agency project with particular technical relevance and high dissemination

value for a joint technical feasibility and, as national reference for the ARISS project, the association will involve ASI in the school contacts with the astronauts on board the ISS. On the other hand ASI will make available the resources at its operation centers for verification activities or test of devices developed for educational purposes. The 2020-2023 framework program subscription confirms the collaboration between the Agency and our Association already started in 2011. More on the event on the AMSAT Italia web site <http://www.amsat.it> (in Italian).

[ANS thanks Fabrizio Carrai, IU5GEZ of AMSAT Italia for the above information]

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[ANS thanks Ray Hoad, WA5QGD, AMSAT Orbital Elements Manager, for the above information]

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The successful school list has been updated as of 2020-10-14 18:00 UTC.

https://www.amsat.org/amsat/ariss/news/Successful_ARISS_schools.rtf

The ARISS webpage is at https://www.ariss.org/. Note that there are links to other ARISS websites from this site.

The main page for Applying to Host a Scheduled Contact may be found at https://www.ariss.org/apply-to-host-an-ariss-contact.html

ARISS Contact Applications (United States)

The Amateur Radio on the International Space Station (ARISS) Program is seeking formal and informal education institutions and organizations, individually or working together, to host an Amateur Radio contact with a crew member on board the ISS. ARISS anticipates that the contact would be held between July 1, 2021 and December 30,

2021. Crew scheduling and ISS orbits will determine the exact contact dates. To maximize these radio contact opportunities, ARISS is looking for organizations that will draw large numbers of participants and integrate the contact into a well-developed education plan.

The deadline to submit a proposal is November 24th, 2020. Proposal information and more details such as expectations, proposal guidelines and the proposal form can be found at www.ariss.org. An ARISS Introductory Webinar session will be held on October 8, 2020 at 8PM ET. The Eventbrite link to sign up is: https://ariss-proposal-webinar-fall-2020.eventbrite.com

The Opportunity

Crew members aboard the International Space Station will participate in scheduled Amateur Radio contacts. These radio contacts are approximately 10 minutes in length and allow students to interact with the astronauts through a question-and-answer session.

An ARISS contact is a voice-only communication opportunity via Amateur Radio between astronauts and cosmonauts aboard the space station and classrooms and communities. ARISS contacts afford education audiences the opportunity to learn firsthand from astronauts what it is like to live and work in space and to learn about space research conducted on the ISS. Students also will have an opportunity to learn about satellite communication, wireless technology, and radio science.

Because of the nature of human spaceflight and the complexity of scheduling activities aboard the ISS, organizations must demonstrate flexibility to accommodate changes in dates and times of the radio contact.

Amateur Radio organizations around the world with the support of NASA and space agencies in Russia, Canada, Japan and Europe present educational organizations with this opportunity. The ham radio organizations volunteer efforts provide the equipment and operational support to enable communication between crew on the ISS and students around the world using Amateur Radio.

Please direct any questions to ariss.us.education(a)gmail.com.

For future proposal information and more details such as expectations, proposal guidelines and proposal form, and dates and times of Information Webinars, go to www.ariss.org.

ARISS Contact Applications (Europe, Africa and the Middle East)

Schools and Youth organizations in Europe, Africa and the Middle East interested in setting up an ARISS radio contact with an astronaut on board the International Space Station are invited to submit an application from September to October and from February to April.

Please refer to details and the application form at www.ariss-eu.org/school-contacts. Applications should be addressed by email to: school.selection.manager(a)ariss-eu.org

ARISS Contact Applications (Canada, Central and South America, Asia and Australia and Russia)

Organizations outside the United States can apply for an ARISS contact by filling out an application. Please direct questions to the appropriate regional representative listed below. If your country is not specifically listed, send your questions to the nearest ARISS Region listed. If you are unsure which address to use, please send your question to the ARISS-Canada representative; they will forward your question to the appropriate coordinator.

For the application, go to: https://www.ariss.org/ariss-application.html.

ARISS-Canada and the Americas, except USA: Steve McFarlane, VE3TBD email to: ve3tbd(a)gmail.com

ARISS-Japan, Asia, Pacific and Australia: Satoshi Yasuda, 7M3TJZ email to: ariss(a)iaru-r3.org, Japan Amateur Radio League (JARL) https://www.jarl.org/

ARISS-Russia: Soyuz Radioljubitelei Rossii (SRR) https://srr.ru/

ARISS is always glad to receive listener reports for the above contacts. ARISS thanks everyone in advance for their assistance. Feel free to send your reports to aj9n(a)amsat.org or aj9n(a)aol.com.

Listen for the ISS on the downlink of 145.8Ã˜ MHz unless otherwise noted. ARISS congratulations the following mentors who have now mentored over 100 schools:

Francesco IKÃ˜WGF with 140
Satoshi 7M3TJZ with 138
Sergey RV3DR with 137
Gaston ON4WF with 123

The webpages listed below were all reviewed for accuracy. Out of date webpages were removed, and new ones have been added. If there are additional ARISS websites I need to know about, please let me know.

Total number of ARISS ISS to earth school events is 1403.
Each school counts as 1 event.
Total number of ARISS ISS to earth school contacts is 1336.
Each contact may have multiple schools sharing the same time slot.
Total number of ARISS supported terrestrial contacts is 48.

The following US states and entities have never had an ARISS contact: South Dakota, Wyoming, American Samoa, Guam, Northern Marianas Islands, and the Virgin Islands.

QSL information may be found at: https://www.ariss.org/qsl-cards.html

ISS callsigns: DPÃ˜ISS, IRÃ˜ISS, NA1SS, OR4ISS, RSÃ˜ISS

Frequency chart for packet, voice, and crossband repeater modes showing
Doppler correction as of 2005-07-29 04:00 UTC
https://bit.ly/3kVbNNL

Check out the Zoho reports of the ARISS contacts
https://reports.zoho.com/ZDBDataSheetView.cc?DBID=412218000000020415

Exp. 63 now on orbit
Kate Rubins KG5FYJ
Sergey Ryzhikov
Sergey Kud-Sverchkov

About ARISS:

Amateur Radio on the International Space Station (ARISS) is a coopera-
tive venture of international amateur radio societies and the space
agencies that support the International Space Station (ISS). In the
United States, sponsors are the Radio Amateur Satellite Corporation
(AMSAT), the American Radio Relay League (ARRL), the ISS National Lab
and National Aeronautics and Space Administration (NASA). The primary
goal of ARISS is to promote exploration of science, technology, engin-
eering, and mathematics (STEAM) topics by organizing scheduled contacts
via amateur radio between crew members aboard the ISS and students in
classrooms or public forms. Before and during these radio contacts,
students, educators, parents, and communities learn about space, space
technologies, and amateur radio. For more information, see
www.ariss.org.

73,

Charlie Sufana AJ9N
One of the ARISS operation team mentors

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team men-
tors for the above information]

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The activity will be in several HF bands too, using CW and FT8, portable Alex Loop Antenna with 5 watts. QSL via LoTW.

BRAZIL, ESPIRITO SANTO. Sandro Ribeiro PY1SAN and Claudio MARCelo PY1CMT are QRV on Satellite QO-100 (maybe AO-07, FO-29, RS-44) using CW and SSB as PR1S from Nova Almeida (GG99) from 16 to 18 November 2020. A activity will be in several HF bands too, using CW and FT8, portable Alex Loop Antenna with 5 watts. QSL via LoTW.

Major Roves:

Maine!!!!!!

@KL7TN will be in FN53/54/55/56/57/64/65/66/67 Nov 13-18. Details to follow.

Editor's Note: Don't forget to check out Paul Overn's GridMasterHeatMap on Twitter: https://bit.ly/35kUqB3 and Blog at: https://bit.ly/3eOpYT4

Please submit any additions or corrections to KE0PBR (at) gmail.com
[ANS thanks Paul Overn, KE0PBR, AMSAT rover page manager, for the above information]
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gon is scheduled to dock to the space station at 4:20 a.m. Sunday, Nov. 15. Launch, prelaunch activities, and docking will air live on NASA Television and the agencyâ€™s website. https://www.nasa.gov/nasalive Additional Information is available at: https://go.nasa.gov/38Aii5J
(ANS thanks NASA for the above information)

+ Rocket Lab launch delayed to November 19 UTC.
See: https://twitter.com/RocketLab/status/1327691418970644481
Previous announcement: The next Rocket Lab launch window is scheduled for November 15 UTC at 01:44 to 04:34. It's is called "Return to Sender". They are going to try to recover the first stage by capturing it by helicopter as it is descending.
See: https://www.rocketlabusa.com/missions/next-mission/
The payload is 30 cubesats, one of which (APSS-1) is a 1U student satellite from Auckland University. This one has a 9600 GMSK downlink in the 70CM band. The format and details are due to be published here in the next few days. https://apss.space.auckland.ac.nz/.
To balance the payloads, a 3D printer version of "Gnome Chompski" has been attached to the kick stage. See:
https://twitter.com/RocketLab/status/1323335303008903170
Gabe Newell who made the Gnome is going to donate $1 to Starship Children's Hospital for every person watching the launch live. For information about Starship Children's Hospital, see:
https://www.starship.org.nz

Editors Note: at time of 11/11/2020 draft, a group message from Mark Jessop, VK5QI indicated that APSS-1's IARU frequency coordination request has not been completed:
http://www.amsatuk.me.uk/iaru/formal_detail.php?serialnum=669
(ANS thanks Terry Osborne ZL2BAC for passing along the above information)

+ NROL-101 Mission Targeting Nov. 13 due to Hurricane Eta
(Cape Canaveral Air Force Station, Fla., Nov. 11, 2020) -- Due to impending weather and escalation of Hurricane Eta, ULA is now targeting Friday, Nov. 13, at 5:13 p.m. EST (2213 UTC) for the launch of the NROL-101 mission for the National Reconnaissance Office. See https://bit.ly/35kiIeA for additional information.
(ANS thanks the ULA editors for the above information)

+ NASA has extended the Cyclone Global Navigation Satellite System mission (CYGNSS) through 2023 with plans to revisit and possibly extend the mission through 2026. The constellation of microsatellites designed, built and operated by Southwest Research Institute with the University of Michigan, has made history over the last three-plus years, penetrating thick clouds and heavy rains to accurately assess wind speeds and better understand hurricane intensification. The NASA senior review panel rated the mission extension proposal as excellent, based on the current health of the constellation of instruments, particularly considering the low-cost nature of the sensors.
(ANS thanks Space Daily for the above information)

+ SpaceX fired up the three rocket engines of its Starship SN8 prototype for the second time last night at its testing facilities in Boca Chica, Texas. The event was a powerful blast of orange smoke â€” and flying sparks, as captured by onlookers on video. The video and additional information is available at https://bit.ly/3lmcSPD
(ANS thanks futurism.com for the above information)

+ Two Russian cosmonauts are scheduled to go outside the International Space Station on Wednesday, Nov. 18, to conduct a spacewalk that will initiate preparations for the arrival of a new Russian research module. Expedition 64 Commander Sergey Ryzhikov and Flight Engineer

Sergey Kud-Sverchkov, both of the Russian space agency Roscosmos, will relocate an antenna from the Pirs docking compartment, to the Poisk module, the first in a series of tasks over the course of several spacewalks that will prepare Pirs for decommissioning, undocking, and disposal. The Earth-facing Pirs will be replaced by the new Russian Multipurpose Laboratory Module, named "Nauka," Russian for "science," which is being prepared for launch at the Baikonur Cosmodrome in Kazakhstan. The spacewalk is expected to last up to six hours. Live coverage of the Russian spacewalk will begin at 13:30z on NASA Television and the agency's website. The spacewalk is expected to begin about 14:30Z.
(ANS thanks NASA for the above information)

+ A Polar Satellite Launch Vehicle lifted off Saturday, Nov. 7 with India's EOS 1 radar imaging satellite and nine rideshare payloads for customers based in the United States, Luxembourg, and Lithuania. The successful mission was Indiaâ€™s first launch in nearly a year due to delays caused by the coronavirus pandemic. Also on Saturday, a new four-stage rocket operated by the Chinese launch company Galactic Energy succeeded on its inaugural flight, delivering a data relay microsatellite to an orbit 300 miles above Earth.
(ANS thanks SpaceflightNow for the above information)

+ After its release from the ISS, many satellite enthusiasts have listened for a signal from the Hawaii Spaceflight Lab's Neutron-1 cubesat. Reports have not come flooding in. Shane Pule, KC3PPM shared an email with the UH-SFL with me that outlines a possible explanation: Aloha Shane, Thank you for this information, we appreciate you listening for Neutron-1. We haven't been successful at contacting Neutron-1 yet. We have noticed a signal at 435.275MHz while tracking Neutron-1, and we are investigating this in the event that our signal is shifted by 25kHz. We are not sure what could have caused this, but there may be an issue with the SDR tuning onboard the spacecraft. 73, Amber Imai-Hong
(ANS thanks < Shane Pule, KC3PPM > for the above information)

Tips for the New Satellite Operator - Mobile Apps

This is the second of a what I hope to be a monthly New Satellite Operators Corner. I will offer AMSAT New Operator tips and links to AMSAT resources for new operators and posts from various interest groups where useful info is published. This weeks tip comes from Rick, WA6NDR via TH-D74A(a)groups.io. I hope you find this as useful as I have.
Jack, KD4IZ, Editor, AMSAT News Service.

There are many websites, cell phone, and desktop apps available for tracking satellites and learning about launches. For the beginner, the choices are bewildering and everyone seems to have a favorite. There are many choices available for all operating systems to choose from. Scott Harvey, KA7FVV, has a very comprehensive website with links to a tremendous amount of great information. He does an excellent job of distilling the basics and presenting them along with some great "how to" information. See: https://bit.ly/3nwx6H9

Scott suggested a number of the rocket launch apps to me recently and I have been exploring them. He also suggested several tracking apps. I don't have an opinion or a recommendation for any of them yet, but I would encourage you to join me in looking these over.

Of the launch apps I am looking over, the primary are Launchcraft, Spacelaunch, and Supercluster. All appear to be available for both iOS and Android devices and can be found on the respective "store" sites

for each OS. They are news aggregation apps that focus on upcoming space launches as well as offering timetable and post-launch reports.

By the my next monthly report, I should be able to address them, but for those who are interested, have at it and tell me what you think. Please let me know if you find an app that is particularly useful.

(ANS thanks AMSAT Member Scott Harvey, KA7FVV for sharing this information and his website)

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73 and Remember to help keep amateur radio in space,
This week's ANS Editor, Jack Spitznagel, KD4IZ

kd4iz at amsat dot org